Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof which has integrated into its genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for ~~a marker fluorescent protein~~ an enhanced green fluorescent protein, wherein the regulatory sequence includes a nestin promoter and a second intron, or fragment thereof, of the mammalian nestin gene, ~~and~~ wherein the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is expressed in multipotent stem and progenitor cells of the ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof, and wherein the expression of the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is detected in the rodent, progeny or embryo thereof using fluorescence.

2. (Currently amended) The ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof of Claim 1 wherein the gene coding for the ~~marker fluorescent~~

~~protein~~ enhanced green fluorescent protein is selectively expressed in multipotent stem and progenitor cells of the ~~non-human~~ transgenic ~~mammal~~ rodent or progeny thereof.

3. (Currently amended) The ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof of Claim 1 wherein the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is expressed in neural stem and progenitor cells of the ~~non-human~~ transgenic ~~mammal~~ rodent or progeny thereof.

4. (Currently amended) The ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof of Claim 1 wherein the ~~mammal~~ rodent is a mouse.

5. (Currently amended) The ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof of Claim 1 wherein the regulatory sequence of the mammalian nestin gene is obtained from a rat nestin gene.

6–7. (Canceled)

8. (Currently amended) The ~~non-human~~ transgenic ~~mammal~~ rodent, progeny or embryo thereof of ~~Claim 7~~ Claim 1 wherein both the promoter and the

~~regulatory sequence~~ second intron, or fragment thereof, are obtained from the same mammalian nestin gene.

9. (Currently amended) A method of producing a ~~non-human~~ transgenic ~~mammal~~ rodent which expresses ~~a marker fluorescent protein~~ an enhanced green fluorescent protein in multipotent stem and progenitor cells, comprising:

(a) introducing into a fertilized egg of a ~~non-human mammal~~ rodent, DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for ~~a marker fluorescent protein~~ an enhanced green fluorescent protein, wherein the regulatory sequence includes a nestin promoter and a second intron, or fragment thereof, of the mammalian nestin gene, ~~and~~ wherein the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is expressed in multipotent stem and progenitor cells of the ~~non-human mammal~~ rodent, and wherein the expression of the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is detected in the rodent using fluorescence;

(b) introducing the fertilized egg of (a) into a ~~non-human mammal~~ rodent of the same species;

(c) allowing the ~~non-human mammal~~ rodent to produce progeny which are ~~non-human~~ transgenic ~~mammals~~ rodents; and

(d) selecting ~~non-human mammal~~ rodent progeny of (c) whose multipotent stem and progenitor cells ~~selectively~~ express the ~~marker fluorescent~~ enhanced green fluorescent protein gene.

10. (Currently amended) The method of Claim 9 wherein the gene coding for ~~a marker fluorescent protein~~ the enhanced green fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

11. (Currently amended) The method of Claim 9 wherein the gene coding for ~~a marker fluorescent protein~~ the enhanced green fluorescent protein is expressed in neural stem and progenitor cells.

12. (Currently amended) The method of Claim 9 wherein the ~~non-human~~ transgenic ~~mammal~~ rodent is a mouse.

13. (Currently amended) The method of Claim 9 wherein the regulatory sequence of the mammalian nestin gene is obtained from a rat nestin gene.

14–15. (Canceled)

16. (Currently amended) The method of ~~Claim 15~~ Claim 9 wherein both the promoter and the ~~regulatory sequence~~ second intron, or fragment thereof, are obtained from the same mammalian nestin gene.

17. (Currently amended) A ~~non-human~~ transgenic ~~mammal~~ rodent produced by the method of Claim 9.

18. (Currently amended) An expression construct comprising a promoter sequence, a gene coding for an enhanced green fluorescent protein, and ~~a regulatory sequence present in the second intron of a mammalian nestin gene~~ a second intron, or fragment thereof, of a mammalian nestin gene.

19. (Currently amended) A method for measuring a multipotent stem and progenitor cell population in ~~an animal~~ a rodent organ or region thereof, comprising:

measuring cells which fluoresce from the organ or region thereof of a ~~non-human~~ transgenic ~~mammal~~ rodent which has integrated into its genome DNA comprising:

a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for ~~a fluorescent protein~~ an enhanced green fluorescent protein, wherein the regulatory sequence includes a nestin promoter and a second intron, or fragment

thereof, of the mammalian nestin gene, ~~and~~ wherein the gene coding for the ~~fluorescent protein~~ enhanced green fluorescent protein is expressed in multipotent stem and progenitor cells of the ~~non-human~~ transgenic ~~mammal~~ rodent, and wherein the expression of the gene coding for the ~~marker fluorescent protein~~ enhanced green fluorescent protein is detected in the rodent organ or region thereof using fluorescence,

wherein the cells which fluoresce are multipotent stem and progenitor cells.

20. (Currently amended) The method of Claim 19 wherein the gene coding for ~~a fluorescent protein~~ the enhanced green fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

21. (Currently amended) The method of Claim 19 wherein the gene coding for ~~a fluorescent protein~~ the enhanced green fluorescent protein is expressed in neural stem and progenitor cells.

22–23. (Canceled)

24. (Currently amended) The method of ~~Claim 23~~Claim 19 wherein both the promoter and the ~~regulatory sequence~~ second intron, or fragment thereof, are obtained from the same mammalian nestin gene.

25. (Withdrawn) A method of obtaining primary, noncultured, multipotent stem and progenitor cells comprising isolating cells which express a marker/reporter protein from a non-human transgenic mammal, progeny or embryo thereof which has integrated into its genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for the marker/reporter protein wherein the gene coding for the marker/reporter protein is expressed in multipotent stem and progenitor cells of the non-human transgenic mammal, progeny or embryo thereof.

26. (Withdrawn) A method of obtaining primary, noncultured, multipotent stem and progenitor cells comprising isolating fluorescent cells from a non-human transgenic mammal, progeny or embryo thereof which has integrated into its genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for a fluorescent protein wherein the gene coding for the fluorescent protein is expressed in multipotent stem and progenitor cells of the non-human transgenic mammal, progeny or embryo thereof.

27. (Withdrawn) The method of Claim 26 wherein the gene coding for the fluorescent protein is selectively expressed in multipotent stem and progenitor cells of the non-human transgenic mammal, progeny or embryo thereof.

28. (Withdrawn) The method of Claim 26 wherein the gene coding for the fluorescent protein is expressed in neural stem and progenitor cells of the non-human transgenic mammal, progeny or embryo thereof.

29. (Withdrawn) The method of Claim 26 wherein the regulatory sequence comprises a second intron sequence of the mammalian nestin gene.

30. (Withdrawn) The method of Claim 26 wherein the regulatory sequence further includes a promoter.

31. (Withdrawn) The method of Claim 30 wherein both the promoter and the regulatory sequence are obtained from the same mammalian nestin gene.

32. (Withdrawn) The method of Claim 26 further comprising identifying and/or isolating genes expressed in said isolated fluorescent cells.

33. (Withdrawn) The method of Claim 26 further comprising identifying and/or isolating proteins expressed in said isolated fluorescent cells.

34. (Withdrawn) The method of Claim 26 further comprising identifying and/or isolating cell-specific surface antigens expressed on said isolated fluorescent cells.

35. (Withdrawn) The method of Claim 26 further comprising transplanting said isolated fluorescent cells into a live animal or a viable embryo.

36. (Withdrawn) The method of Claim 26 wherein fluorescent cells are isolated by fluorescent activated cell sorting.

37. (Withdrawn) A method for assessing a compound's ability to promote multipotent stem and progenitor cell differentiation, comprising:

(a) contacting live multipotent stem and progenitor cells, which have integrated into their genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for a marker/reporter protein wherein the gene coding for the marker/reporter protein is expressed in multipotent stem and progenitor cells, with a compound to be assessed;

(b) determining a marker/reporter protein measurement of the live cells of a) in the presence of the compound; and

(c) comparing the marker/reporter protein measurement of b) to the marker/reporter protein measurement of live control cells;

wherein a decrease or absence of marker/reporter protein measurement of the live cells in the presence of the compound compared to the marker/reporter protein measurement of the live control cells is indicative of the compound's ability to promote multipotent stem and progenitor cell differentiation.

38. (Withdrawn) The method of claim 37 wherein the marker/reporter protein is a fluorescent protein and the marker/reporter protein measurement is fluorescence.

39. (Withdrawn) The method of Claim 38 wherein the gene coding for the fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

40. (Withdrawn) The method of Claim 38 wherein the gene coding for a fluorescent protein is expressed in neural stem and progenitor cells.

41. (Withdrawn) The method of Claim 37 wherein the compound is a therapeutic agent.

42. (Withdrawn) The method of Claim 37 wherein the differentiation is to neural stem and progenitor cells.

43. (Withdrawn) A method for assessing a compound's toxicity to multipotent stem and progenitor cells, comprising:

(a) contacting live stem and progenitor cells, which have integrated into their genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for a marker/reporter protein, wherein the gene coding for the marker/reporter protein is expressed in multipotent stem and progenitor cells, with a compound to be assessed;

(b) determining live cells expressing the marker/reporter protein in the presence of the compound; and

(c) comparing the live cells expressing the marker/reporter protein of b) to live, control cells expressing the marker/reporter protein;

wherein a decrease or absence of live cells expressing the marker/reporter protein in the presence of the compound compared to the live control cells expressing the

marker/reporter protein is indicative of the compound's toxicity to multipotent stem and progenitor cells.

44. (Withdrawn) The method of Claim 43 wherein the marker/reporter protein is a fluorescent protein and cells expressing the marker/reporter protein are fluorescent cells.

45. (Withdrawn) The method of Claim 44 wherein the gene coding for a fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

46. (Withdrawn) The method of Claim 44 wherein the gene coding for fluorescent protein is expressed in neural stem and progenitor cells.

47. (Withdrawn) A method for assessing a compound's ability to promote differentiation of totipotent cells into multipotent stem and progenitor cells, comprising:

(a) contacting live totipotent stem and progenitor cells, which have integrated into their genome DNA comprising a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for a marker/reporter protein, wherein the

gene coding for the marker/reporter protein is expressed in multipotent stem and progenitor cells;

(b) determining a marker/reporter protein measurement of the live cells of a) in the presence of the compound; and

(c) comparing the marker/reporter protein measurement of b) to marker/reporter protein measurement of control cells;

wherein an increase of marker/reporter protein measurement in the presence of the compound compared to the marker/reporter protein measurement of control cells is indicative of the compound's ability to promote differentiation of totipotent cells into multipotent stem and progenitor cells.

48. (Withdrawn) The method of Claim 47 wherein the marker/reporter protein is a fluorescent protein and the marker/reporter protein measurement is fluorescence.

49. (Withdrawn) The method of Claim 48 wherein the gene coding for a fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

50. (Withdrawn) The method of Claim 48 wherein the compound is a therapeutic agent.

51–71. (Canceled)

72. (Currently amended) A method for measuring a multipotent stem and progenitor cell population in a live ~~animal~~ rodent, organ or tissue of the live ~~animal~~ rodent, comprising:

measuring fluorescence of cells from a live ~~non-human~~ transgenic ~~mammal~~ rodent, or from an organ, tissue or region of the live ~~non-human~~ transgenic ~~mammal~~ rodent, wherein the live ~~non-human~~ transgenic ~~mammal~~ rodent has integrated into its genome DNA comprising:

a regulatory sequence of a mammalian nestin gene operably linked to a gene coding for ~~a fluorescent protein~~ an enhanced green fluorescent protein, wherein the regulatory sequence includes a nestin promoter and a second intron, or fragment thereof, of the mammalian nestin gene, ~~and~~ wherein the gene coding for the ~~fluorescent protein~~ enhanced green fluorescent protein is expressed in multipotent stem and progenitor cells of the ~~non-human~~ transgenic ~~mammal~~ rodent, and wherein the expression of the gene coding for the ~~fluorescent protein~~ enhanced green fluorescent protein is detected in the live transgenic rodent, or in the organ, tissue or region of the live transgenic rodent, using fluorescence,

wherein the cells which fluoresce are multipotent stem and progenitor cells.

73. (Currently amended) The method of Claim 72 wherein the gene coding for ~~a fluorescent protein~~ the enhanced green fluorescent protein is selectively expressed in multipotent stem and progenitor cells.

74. (Currently amended) The method of Claim 72 wherein the gene coding for ~~a fluorescent protein~~ the enhanced green fluorescent protein is expressed in neural stem and progenitor cells.

75–76. (Canceled)

77. (Currently amended) The method Claim 72 wherein both the promoter and the ~~regulatory sequence~~ second intron, or fragment thereof, are obtained from the same mammalian nestin gene.

78–79. (Canceled)